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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,636	07/03/2003	Bhargava K. Yenduri	SUNMP459	4610
32291 7590 03/05/2007 MARTINE PENILLA & GENCARELLA, LLP 710 LAKEWAY DRIVE SUITE 200 SUNNYVALE, CA 94085			EXAMINER HOMAYOUNMEHR, FARID	
			ART UNIT 2132	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/613,636

Applicant(s)

YENDURI, BHARGAVA K.

Examiner

Farid Homayounmehr

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-13,15-25,27-32,34 and 35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-13,15-25,27-32,34 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/4/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communications: application, filed 7/3/2003; amendment filed 12/4/2006.
2. Claims 1-36 are pending in the case.

Response to Arguments

3. Applicant's arguments have been fully considered.
 - 3.1. Applicant argues, " As noted all of the independent claims are defining that the kernel modules must be verified before loading. Consequently, the teachings of Rowland do not apply, as Rowland's system allows loading of kernel modules, and it is not until a later point that they are detected, as noted in Paragraph 149." It is noted that Applicant interprets the claim limitations to require verification before loading the kernel modules. However, claim limitations require verification while the kernel modules are being loaded, and not necessarily before they are loaded. It is also noted that Applicant interprets Rowland's teachings of detecting Loadable Kernel Modules (LKM) to be limited to already loaded kernels, and not applicable to kernels being loaded or not loaded. In other words, per Applicant's view, Rowland does not teach detecting LKMs before they are loaded or while they are loaded being loaded in real-time. However,

Art Unit: 2132

Rowland incorporates teachings of U.S. Patent Application number 09/268084, to Rowland (see parag. 136), which is now U.S. Patent No. 6,405,318, titled Intrusion Detection System. In said patent, Rowland clearly recognized the benefits and teaches an intrusion detection system that works in real-time to detect malicious activity before they reach the system (see for example col. 2 line 1 to col. 3 line 5). Therefore, Rowland suggests performing the verification of LKMs before or during loading to the system.

Based on the above discussion, applicant's argument that limitations of claims are not disclosed or obvious over Rowland is not persuasive.

3.2. Applicant's argument relative to some elements of dependent claims missing from Rowland is found persuasive. The mentioned dependent claims are incorporated into the independent claims as a result of applicant's amendments. See the new grounds of rejection in the following sections.

Information Disclosure Statement

4. Information Disclosure Statement submitted by applicant on 12/4/2006 has been considered. See attached form PTO-1449.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-13, 15-25, 27-32, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rowland (US Patent Application Publication No. 2002/0129264 A1, filed January 10, 2002).

6.1. As per claim 1, Rowland is directed to a computer system comprising: a processor; a memory storage unit; an operating system comprising a kernel, said kernel comprising a plurality of kernel modules, said kernel modules comprising signature information; and a kernel module signature verification system for verifying said kernel module signature information of each of said plurality of kernel modules as said plurality of kernel modules are loaded into said kernel (paragraph 149 describes a Loadable Kernel Module Agent 1306, which is an agent looking for loadable kernels and verifies their validity. As shown in Fig. 13, item 1306 is one of the agents in the group of Mobile Autonomous Code (MAC) Security Agents. Another one of the MAC agents is Known Intrusion Agent 1305 (paragraph 148), which uses signatures to identify intrusions such as suspect loadable kernel modules), wherein said kernel module signature information is generated via a public key and a private key compilation in said kernel module (use of

Art Unit: 2132

public and private keys to create a signature verification protocol is well-known in the art).

6.2. Claim 2 has been cancelled by the applicant.

6.3. As per claims 3 and 4, Rowland is directed to the computer system of claim 1, wherein said kernel module signature information comprises signature length data unique to each of said plurality of kernel modules, said signature length or size data used by said kernel module signature verification system in uniquely identifying each of said plurality of kernel modules (the signature verification process generates the signature of data and compares it with the signature. The generated signature and the signature must be identical, which means the length and size of the generated signature and the signature must also be identical).

6.4. As per claim 5, Rowland is directed to the computer system of claim 4, wherein said kernel module signature verification system comprises a kernel cryptographic framework for verifying said kernel module signature information (paragraph 132).

6.5. As per claim 6, Rowland is directed to the computer system of claim 5, wherein said kernel module signature verification system further comprises a kernel cryptographic framework daemon for performing verification lookup operations of

Art Unit: 2132

signature information provided to said kernel cryptographic framework in said kernel (paragraph 153 shows use of system daemons to run a software process).

6.6. As per claim 7, Rowland is directed to the computer system of claim 6, wherein said kernel cryptographic framework daemon further performs module verification of said plurality of kernel modules (see response to claim 6).

6.7. As per claim 8, Rowland is directed to the computer system of claim 7, wherein said kernel cryptographic framework retrieves pathname information of said signature information for each of said plurality of kernel modules when said plurality of kernel modules attempt to load up to said kernel to perform cryptographic operations (retrieving the pathname information is part of a typical access process in a computer. When the signature is fetched from the memory to the cryptographic process, it is accessed by its pathname.)

6.8. As per claim 9, Rowland is directed to the computer system of claim 8, wherein said kernel cryptographic framework comprises a cryptographic service provider registration unit for registering each of said plurality of kernel modules wishing to provide cryptographic services in said kernel (per paragraph 29, all agents and processes of Rowland register with a module that oversees their operation).

Art Unit: 2132

6.9. As per claim 10, Rowland is directed to the computer system of claim 9, wherein said kernel cryptographic framework further comprises a intra-kernel communication unit for enabling communications between said kernel cryptographic framework and said kernel cryptographic framework daemon (paragraph 29 suggests a Master Control Process which is a communication unit allowing elements of the system to communicate with one another.).

6.10. As per claim 11, Rowland is directed to the computer system of claim 10, wherein said kernel cryptographic framework further comprises a data structure unit for storing said kernel module signature information (Rowland agents access to many different kinds of data, including signature data. Use of datastructures in computer systems to provide data to processes is well-known in the art).

6.11. Limitations of claims 12, 13, 15-22, 25, 27-32, and 35 are substantially the same as claims 1-11 above.

6.12. As per claim 23, Rowland is directed to the computer operating system of claim 22, wherein said kernel cryptographic framework and said kernel cryptographic framework daemon communicate via a plurality of input/output control commands (paragraphs 29-31 describes how handlers communicate with one another to exchange messages. The messages contain commands to initiate the functionality of each handler).

6.13. As per claim 24, Rowland is directed to the computer operating system of claim 23, wherein said input/output control commands comprise a door create command for creating a plurality of cryptographic doors for enabling communication between said kernel cryptographic framework and said kernel cryptographic framework daemon (paragraph 87 discloses use of secured messaging between different elements of the system).

6.14. As per claim 34, Rowland is directed to the method of claim 33, wherein said kernel cryptographic framework daemon verifies signature data contained in each of said plurality of kernel cryptographic modules after said requesting kernel module has registered with said kernel cryptographic framework (Rowland verifies validity of files, messages and other data using the signature handler (paragraph 124-127). The signature handler verifies signatures used by the Loadable Kernel Module Agent 1306, or Known Intrusion Agent 1305 to detect unauthorized Kernel modules).

6.15. Claims 14, 26, 33 and 36 were cancelled by the applicant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farid Homayounmehr whose telephone number is 571

Art Unit: 2132



272 3739. The examiner can normally be reached on 9 hrs Mon-Fri, off Monday biweekly.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (571) 272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Farid Homayounmehr

Examiner

Art Unit: 2132



Benjamin E. Tenner
Examiner Art Unit 2132